

CLAIMS

1. The control method of arranging carbon nanotubes selectively orientationally on the surface of a substrate comprising:

1) solid substrate is treated to be hydrophilic or hydrophobic;

5 2) organic macromolecular with a hydrophilic and hydrophobic end is combined to the surface of every carbon nanotubes which has been purified routinely, and then the resulted carbon nanotubes is dissolved into water or organic solvent;

3) the said solution is spread onto the surface of water in sub-phase, then after the water or the organic solvent has been volatile out, the surface pressure- area isotherm of the carbon nanotube
10 thin film with single molecular on the water surface is controlled to press film;

4) the resulted carbon nanotube film with single layer is transferred to the surface of the said solid substrate to form a arrangement layer of carbon nanotubes.

2. The control method of claim 1, wherein hydrophilic treatment of the said solid substrate is to submerge the substrate into concentrate acid above 50°C, and hydrophobic treatment of that is to
15 silanize the substrates after hydrophilic treatment.

3. The control method of claim 2, wherein the concentrate acid is the concentrated nitric acid.

4. The control method of claim 1, wherein carbon nanotubes will be sulfated/nitridized firstly to form carboxyl group at each end and side of the tube, and then acylated and aminated to attach the organic macromolecular.

20 5. The control method of claim 1, wherein surface pressure-area isotherm of the carbon nanotube single-molecular thin film is controlled during step 3) with pressure about 20-50mN/m.

6. The control method of anyone of claim 1 to 5, wherein light irradiation of high energy is applied to carbon nanotube monolayer film formed in step 4), in order that some organic macromolecular with hydrophilic and hydrophobic end are decomposed and evaporated from the
25 substrate.

7. The control method of claim 6, wherein the high energy is UV irradiation.